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A review of energy conservation initiatives by the Government of India

Paritosh Nandi*, Sujay Basu[1]

School of Energy Studies, Jadavpur University, Calcutta 700032, India

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Abstract

Energy conservation is the need of the hour. The first oil shock of 1973 shook up the industrialized nations of the world and awakened them from the sleepy complacency of never-ending oil flow. It made them face the stark reality of the uncertainty in oil supply restoration and the fragility of the trade in oil. This was the time when many countries realized the urgent need for energy conservation. Notably, the wave of energy conservation had struck the Indian intelligentia 3 years earlier when a Fuel Policy Committee was set up by the Government of India in 1970, which finally bore fruits three decades hence in the form of enactment of the much awaited Energy Conservation Act, 2001 by the Government of India. This Act made provisions for setting up of the Bureau of Energy Efficiency, a body corporate incorporated under the Act, for supervising and monitoring the efforts on energy conservation in India. In this article the stages in the historical development of Energy Conservation in India, the Government initiatives taken in this regard and the reasons for the limited success in implementation of conservation policies in the past have been discussed.

Keywords: Bureau of Energy Efficiency; Energy auditor; Energy Conservation Act

Contents

*Corresponding author. Tel.: 91 9433319184; fax: 91 33 24146853.
E-mail address: paritoshnandy@yahoo.com (P. Nandi).
[1]Formerly of Electrical Engineering Department, Jadavpur University, Calcutta 700032, India.

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1. The beginning

The book, 'The Limits To Growth' [1] sponsored by the Club of Rome, a body of economists, scientists, industrialists and social workers of international stature, published in 1972, created a kind of international opinion on the urgent necessity of reduction in energy consumption by emphasizing on the finite nature of world resources and the consequent desirability of a planned slowing down of production activity in order to curb the consumption of materials like minerals and fossil fuels. The necessity of energy conservation for maintaining a stable economic order was also highlighted. The book gave rise to a serious debate, mostly in the academic and intellectual circles, on the sustainability of the economic growth, but failed to draw any worthwhile attention from the policy makers in the governments.

In the same year, at the United Nations Conference on Human Environment at Stockholm [2], discussion on the apparently distinct but inherently related issue of rapid degradation of global environment and unabated growth in material consumption and energy use also took place. Energy being the most polluting sector, the question of its proper management also received due attention. However, unlike the book, this Conference succeeded in making various governments aware of their responsibility in finding out ways and means to keep the world environmentally safe.

A year later, as a result of the Yom-Kippur War of 1973 between Egypt and Israel, the Arabian nations stopped export of oil to the USA, Japan and other countries of Western Europe, all of whom were supporting Israel. It was an almost unprecedented unanimous decision of the members of the Organization of Arab Petroleum Exporting Countries (OAPEC). With oil supply cut-off, the prices shot up inevitably to more than ten times the pre-war prices, a crisis that came to be referred to as the first oil shock [3]. The industrialized nations as well as the not-so-industrialized ones of the world woke up to this hard reality of major uncertainty in the restoration of supply of oil and the phenomenon shook the foundation of the dependence of European and American nations as well as Japan on energy import from the Arabs and made them realize the chaos that a disruption in oil supply by Arabian countries could cause.

After some wide price fluctuations, although oil prices came down bringing huge relief to these nations, the situation was unfortunately found to be short lived. Prices rose again in 1979 with Iranian Revolution thus precipitating the second oil shock. As a result, after nearly a decade of more announcements and little actions, conservation of energy finally started receiving serious attention as an extremely important item in national energy policy agenda [4].

Another momentous outcome of the discussions held at the United Nations Conference on Human Environment at Stockholm was the instituting of a Commission called the UN Commission on Environment and Development (UNCED) by the United Nations in 1983 with Dr. Gro Harelem Brundtland, the then Prime Minister of Norway, as Chairman. The UNCED report 'Our Common Future', more commonly known as the Brundtland Report, formed the basis of policy discussions on environmental and developmental issues at the international level [5].

Thus the impact of the UN Conference, combined with the debate given rise to by the book 'The Limits to Growth', further precipitated by the two oil shocks forced the governments all over the world to take the resources constraints more seriously. In less-developed countries, environmental problems were somewhat secondary. In agreement with the rebuff at Stockholm of Mrs. Indira Gandhi, the then Prime Minister of India, to the industrialized nations for first polluting the earth through unbridled consumption and then sermonising the Third World Countries, various leaders opined that it was outright hypocritical on the part of the polluting rich north to ignore the legitimate demand of the poor south to improve the standard of living by consuming somewhat more.

2. The development

Even before the first oil shock of 1973, the Indian government had become seriously concerned about its meagre energy reserves in the face of increasing demand, especially that of oil. It had set up a Fuel Policy Committee in 1970 under the chairmanship of the noted economist Prof. Sukhamoy Chakraborty, the then member of the Planning Commission of India. The First Part of the Committee's Report was submitted in 1972 and taking due account of the changed energy scenario caused by the oil shock, the Committee submitted a comprehensive final report in 1974 in place of the second part. A brilliant document by itself, the report suggested some important steps to be taken by the government for the projected period up to 1991–92. Taking into consideration the extreme volatility of the oil prices in the international market the various recommendations of the Report were made generally invariant of the price changes and feasible for implementation. It emphasized on the necessity of substitution of oil by coal, in techno-economically feasible cases and in case of electricity higher efficiency in generation and transmission with special attention to hydel power developments. The promotion of indigenous Research and Development in energy technologies by involving the academic institutions was also recommended. The Committee highlighted on the need for a coherent energy policy for national development as energy availability was a necessary but not a sufficient condition, in view of other inputs, for the economic growth. It also provided an outline for the energy policy of the country. Suggestions like the setting up of an Energy Board to ensure the integration of the energy plan with the national development plan not only at the drafting stage but also at every stage of implementation were provided by the Committee in the Report. Government realized the importance of this suggestion in principle but nevertheless, there were the usual bureaucratic delays. The Advisory Board of Energy attached to the Planning Commission of India was set up in 1980 and it prepared a number of study reports including one on Perspective on Energy Demand up to 2004–05 and another on Energy Conservation [6].

Another important development took place in the second half of 1970s. India being a relatively oil-poor country, the oil reserves were very low and the production of oil in India

was quite inadequate and incapable of meeting increasing demand. With shift of dependence from railways to trucks for transporting goods, the transportation sector had become the prime consumer of oil. In 1976, the Ministry of Oil and Petroleum, Government of India, considered it prudent to form the Petroleum Conservation Action Group to promote the conservation of oil. It was reconstituted as Petroleum Conservation Research Association (PCRA) in 1978, with the objectives of creating awareness on the importance, methods and benefits of conserving petroleum products, to promote Research and Development in the field, especially in fuel-efficient technologies, to provide training and technical assistance for better economy and efficiency in use of energy and also to promote substitution of petroleum products by alternative sources of energy. Through hard work over the years PCRA has succeeded in making its activities known throughout the country although the impact on real saving has remained far below expectation.

The Interministrial Working Group on Energy Conservation instituted by the Government of India in August 1981 under the chairmanship of Mr. D.V. Kapur, the then Secretary, Department of Heavy Industries, Government of India to recommend policies and programmes for achieving the targets of energy saving, came up with the first concrete proposal for reduction in energy consumption in India. With the help of the National Productivity Council, an autonomous technology consultancy group under the supervision of Ministry of Industry, the group carried out studies on energy intensive industries and consumption sectors for assessing the potential of saving in energy. In its report submitted in 1983, the Group proposed the creation of an apex body to initiate, coordinate and monitor the progress and implementation of various energy conservation measures in India. The report showed that in Industry, Transportation and Agriculture, the three major economic sectors of India an investment of INR[2] 51 billion could save a capital expenditure of INR 80 billion in capacity addition and could result in the saving of INR 31 billion in annual energy bill.

3. The enactment

Looking at the low awareness and initiative in the private sector regarding energy conservation and realizing that sufficient voluntary actions would not be coming, the Government concluded that the only effective step for reducing consumption in the country was to go for enactment of an appropriate legislation even at the risk of opposition from the private sector industries. The Advisory Board on Energy commissioned the Indian Law Institute in 1987 to prepare a draft of the Energy Conservation Bill for enactment by the Parliament. The main objective of the draft bill completed in 1988 [7] was to empower the government to take such measures as deemed necessary and expedient for the purpose of conserving energy in the country and making appropriate and rational use of energy resources. It contained the provision for the establishment of a Nodal Energy Conservation Organization (NECO), whose observations and recommendations would be binding on all Central and State government agencies as well as the prescribed authorities, by drawing manpower and expertise from the Government departments, Public and Private Sectors Industries, Universities, Institutions and other organizations for exercising this power. Initiatives were in the right direction but the political will of the elected representatives of the people in the government were lacking and the draft Energy

[2]INR = Indian Rupees, 1 US Dollar = 44 INR.

Conservation Bill could not be put to debate in the parliament because of the disturbed political situation arising from frequent change of government at the time.

The legislative measure of the government was considered strong but the creation of the apex body as recommended earlier and envisaged in the Bill, could not be materialised. Thus in place of the NECO a more appropriately named Energy Management Centre (EMC) came into existence by a Government order in 1989 as a registered body under the general administration of the Department of Power, Government of India. With assistance from the United Nations and various agencies of the USA, the EMC coordinated energy auditing of a number of large consumers both in industrial and commercial sector in different regions of the country with the National Productivity Council as the local lead agency. It saw the participation of European and American energy experts in auditing and Indian engineers working side-by-side mutually benefiting each other and the review meetings with presentation of success stories did generate some interest in energy conservation in the private industry circle.

Notwithstanding the rise in fuel prices, the widening gap between demand and supply of electricity leading to supply restrictions, and the government efforts in creating awareness and providing technical and financial assistance, the response to the call for energy conservation from the consumers, large and small, remained characteristically lukewarm. Although there were certain success stories in making substantial gains through energy audits, they failed to generate the right motivation despite wide publicity.

Starting from the mid eighties, the crude oil prices slided down. The economy also stagnated. The overall climate was not quite conducive for taking serious efforts towards effective energy management. Finding no easy answer to the prevailing indifferent attitude of general consumers as well as energy intensive industries, in 1996 the Indian government again made an attempt to introduce a freshly drafted Energy Conservation Bill. The draft Bill was sent to different state governments for comments and it received quite favourable response. Unfortunately, this time too because of lack of strength and political will, the new government could not bring it to the House.

However, meanwhile, two states, viz. West Bengal and Kerala at their own initiatives had already introduced mandatory Energy Audit for large consumers, Kerala in 1992 and West Bengal in 1995 by issuing orders from their respective Departments of Power to this effect. The audits were to be carried out by competent people, incase of West Bengal, by the government-accredited Energy Auditors. The Audit Report was to be submitted to the Department every year and a Detailed Audit was to be done once in every 3 years. Despite the fact that coal and oil do not fall under the states' jurisdictions, the Reports were required to cover these fuels also apart from electricity. Some other states, viz. Gujarat, Tamil Nadu and few others followed the footsteps of these two states and they also introduced similar mandatory audits for all electrical high-tension consumers subsequently. The impact of this mandatory audit measure on the actual consumption and the quantum of savings achieved in the different sectors are yet to be known. However, one achievement was that the large consumers grew more familiar with Energy Audit and became better prepared for Central Government action in this direction.

In keeping with its initiatives in this field, the latest introduction by the Government of India was the Energy Conservation Bill, 2000 (Bill No. 21 of 2000). This Bill of 2000 did not differ much in form and content from the Bill of 1988 except the notable change of the proposal of the creation of the body called the Bureau of Energy Efficiency that would inherit all the rights and liabilities of the EMC which would cease to exist thereafter. The

Bill finally got the nod from the parliament and after receiving the President of India's assent it became an Act in September 2001.

The Energy Conservation Act, 2001 (No. 52 of 2001) as it is called, would strive and act to facilitate and enforce efficient use of energy and its conservation, look into implementation of various measures stipulated including energy labelling of equipment and appliances and mandatory energy audit for all designated consumers. The government is hopeful that right enforcement of the Act would bring about the desired changes in consumer outlook and would prove to be a beneficial instrument in the long run for solving the energy problem of the country.

4. Chronology of events

1970	Fuel Policy Committee, Government of India Report submitted in 1974.
1972	Publication of 'The Limits to Growth' sponsored by Club of Rome.
1972	UN Conference on Human Environment, Stockholm.
1973	First oil shock.
1976	Petroleum Conservation Action Group, Ministry of Oil and Petroleum, Government of India.
1978	PCRA, Government of India.
1979	Second oil shock.
1980	Advisory Board on Energy.
1981	Interministrial Working Group on Energy Conservation. Government of India. Report submitted in 1983.
1988	Drafts of Energy Conservation Bill prepared by the Indian Law Institute.
1989	'EMC', Ministry of Power, Government of India.
1992	Government order on mandatory Energy Audit in Kerala.
1995	Government order on mandatory Energy Audit in West Bengal.
1996	New Drafts of the Energy Conservation Bill.
2000	Fresh Drafts of the Energy Conservation Bill, 2000.
2001	Energy Conservation Act, 2001 enacted by Government of India.

5. An overview of the Energy Conservation Act, 2001

This much-awaited Act provides the legal framework and the institutional arrangements for enforcing energy efficiency and conservation. It provides for the establishment of a body called the Bureau of Energy Efficiency, with effect from 1st March 2002, which would be responsible for implementation of the Act and for monitoring the implementation of energy conservation activities. The Bureau of Energy Efficiency would also be responsible to institutionalize energy efficiency services in the country and to provide leadership to energy efficiency in all sectors of the Indian economy. General superintendence, direction and management of the affairs of the Bureau are vested in its Governing Council consisting of 26 members represented by the Secretaries of various concerned Ministries of the Government of India, CEOs of technical agencies under the Ministries, members representing equipment and appliance manufacturers, industry, architects, consumers and five power regions representing the states. The Governing Council is headed by the Union Minister of Power, Government of India.

The Act brings in the concept of Standards and Labeling as a key requirement for the improvement of energy efficiency and for ensuring that only energy efficient equipments and appliances are made available to the consumers. The Act evolves minimum energy consumption and performance standards for notified equipment and appliances and prohibits the manufacture, sale, import or otherwise dealing in such equipments, which do not conform to these standards. A scheme of mandatory labelling of notified equipment and appliances has also been introduced to enable consumers to make informed decisions and choices.

The Act prescribes a fund called the Central Energy Conservation Fund for facilitating various provisions of the Act.

It has also introduced the concept of 'Designated Consumers', which are the energy intensive industries and other establishments notified so by the government. The Schedule to the Act enlists some designated consumers, which covers mainly the energy intensive industries, like aluminium, fertilizers, iron and steel, cement, pulp and paper, railways, port trust, transport sector, power stations, transmission and distribution companies and commercial buildings or establishments. Energy audit conducted by an accredited energy auditor has been made compulsory for designated consumers as also the requirement of appointing Energy Managers having the prescribed qualifications. Designated consumers are required to comply with various norms and standards of energy consumption prescribed by the Central Government. The Act also makes provision for the Certification of Energy Managers and the Accreditation of Energy Auditing Firms in order to bring out a cadre of professionally qualified energy managers and auditors with expertise in policy analysis, project management, financing and implementation of energy efficiency projects etc. The Energy Manger's responsibility would be to have energy audit carried out thoroughly in an organization and apprise Accredited Energy Auditor on the state of functioning of its plant to enable the Accredited Energy Auditor to make recommendations which are implementable in the organization for reducing the energy cost. The Bureau of Energy Efficiency is responsible for designing training modules and conducting a National level examination for certification of energy managers and energy auditors.

The Act also makes provisions for Energy Conservation Building Codes containing guidelines for erecting commercial buildings for energy conservation. These norms and standards of energy consumption are expressed in terms of per square metre of the area wherein energy is used and includes the location of the building. The Act defines commercial buildings as those intended to be used for commercial purposes and having a connected load of 500 kW or contract demand of 600 kVA and above. It also prescribes energy audit of specified designated commercial building consumers.

The Act gives extensive power to the Bureau of Energy Efficiency, the Central Government and the State Governments and requires all of them to play a very crucial role in facilitating and enforcing efficient use of energy and its conservation.

BEE plays an important role in preparing standards and labels of appliances and equipment, developing list of designated consumers, specifying certification and accreditation procedures, preparing building codes, maintaining Central Energy Conservation fund, undertaking promotional activities in coordination with central and state level agencies, developing Energy Service Companies (ESCOs), transforming the market for energy efficiency, arranging for training of personnel and specialists in the techniques

of efficient use of energy and its conservation, strengthening consultancy services in the field of energy conservation, promoting research and development in the field of energy conservation, promoting use of energy efficient processes, equipment, devices and systems, innovative financing of energy efficiency projects, giving financial assistance to institutions for promoting efficient use of energy and its conservation, maintaining a list of accredited energy auditors, specifying qualifications for accredited energy auditors, specifying the manner and intervals of time in which the energy audit shall be conducted, preparing educational curriculum on efficient use of energy and its conservation for educational institutions, Boards, Universities or autonomous bodies and coordinating with them for inclusion of such curriculum in their syllabus and creating awareness through measures including clearing house.

The Central Government is authorised to notify rules and regulations under various provisions of the Act, provide initial financial assistance to BEE and Energy Conservation Fund, coordinate with various State Governments for notification, enforcement, penalties and adjudication under the Act, specify the norms for processes and energy consumption standards for any equipment or appliances which consumes, generates, transmits or supplies energy, specify equipment or appliance for the purposes of this Act, prohibit manufacture, sale, purchase or import of equipment or appliance unless they conform to energy consumption standards, alter the list of Energy Intensive Industries specified in the Schedule to this Act, direct, having regard to the quantity of energy consumed or the norms and standards of energy consumption the energy intensive industries, to get energy audit conducted by an accredited energy auditor in such manner and intervals of time as may be specified from time to time, direct any designated consumer to get energy audit conducted by an accredited energy auditor, direct any designated consumer to appoint energy manger for efficient use of energy and its conservation, prescribe minimum qualification for energy managers to be designated or appointed under this Act and so on.

The State Governments are empowered to amend energy conservation building codes to suit regional and local climatic condition, to designate state level agency to coordinate, regulate and enforce the provisions of the Act and to constitute a State Energy Conservation Fund for promotion of energy efficiency in the States.

The Act also makes provisions for penalties and adjudication. Penalty for each offence under the Act is INR 10,000 and for continued offences, INR 1000 for each day during which the offence is continued.

The Act provides for an Appellate Tribunal for Energy Conservation. Central Government shall, by notification, establish an Appellate Tribunal to hear appeals against the orders of adjudicating officers under the Act or the Central Government or the State Government or any other authority under this Act.

The BEE has the Minister of Power as its Chairman and the Secretaries of the other ministries dealing with energy like power, coal, petroleum and natural gas, non-conventional energy sources and atomic energy are the members along with the Chairman of the Central Electricity Authority, Director General of Central Power Research Institute, Executive Director of PCRA, Executive Director, Indian Renewable Energy Development Agency, Director General of Bureau of Indian Standards and few other officials and representatives from industries. An attempt at coordinating the views of various energy related government wings has been made in forming the Bureau but the domination of Ministry of Power (Electricity) is there.

6. Reasons for failure of implementation of energy conservation in the past

The implementation of energy conservation initiatives in India have suffered from the following loopholes:

I. A number of independent Ministries looked after energy in India. The ministries are:
   (i) Ministry of Power (Electricity),
   (ii) Ministry of Petroleum and Gas,
   (iii) Ministry of Coal,
   (iv) Ministry of Non-conventional Energy Sources (MNES) and
   (v) Department of Atomic Energy (directly under the Prime Minister).

The coordination links were weak for which it was hardly possible to take a consolidated approach towards energy conservation.

II. Energy conservation initiatives have been taken by different wings of government:
   - Fuel Policy Committee (1970–74) as set up by the Parliament with a member of the Planning Commission (Chairman: Prime Minister) as Chairman.
   - Interministrial Group (1980–83) headed by the Secretary to the Ministry of Heavy Industries, Government of India.
   - The Advisory Board on Energy was created by the government to utilize the experiences of a senior member of the elected party in power and former minister of power and its function was confined to the advisory role. However, it succeeded in preparing the first draft of the Energy Conservation Act.
   - In the 1980's the turbulence created by the second oil shock slowly stabilized with the coming down of prices in the international market. Indian oil production was whipped up and the country attained self-sufficiency in oil close to 70%. The sense urgency in conservation of energy was lost.
   - The creation of the EMC did not change the situation, as it was a sort of appendage to the Ministry of Power with its major function of coordinating the activities of the international agencies like UNDP providing assistance in demonstrating the benefits of energy conservation from the success stories of some establishments as case studies. The European experts imparted some worthwhile training to Indian agencies while working with them. Creating awareness is another area where EMC devoted its efforts.
   - The late 1980's and early 1990's was a politically troubled period in India with frequent changes of government at the centre (Rajiv Gandhi, Prime Minister, was assassinated in 1991). No decision on national issues, not of immediate urgency but long-term policies like Energy Conservation, was taken.
   - Electricity in India is in Joint (State and Centre) Sector. Energy Conservation Bill was to be pushed in the parliament with the concurrence of the state governments. The process was slow.
   - The UN had taken up the climate change through the UNFCCC in 1992 at the Rio-de-Janeiro summit. The First and the Second Assessment Report of the IPCC had been presented in 1992 and 1995, respectively emphasizing the need for reduction of emission of green house gases. The governments had to act.
   - The original draft of the EC Bill of 1988 by the Indian Law Institute was replaced by a diluted version in 1995, which was sent by the Ministry of Power to different States

for comments. The response from the States was in general neither immediate nor very supportive. Mandatory energy audit was introduced by the Department of Power, Government of Kerala. The industry was apprehensive and initially opposed the move. It was pacified with the assurance of no penal measure on violation. The States were somewhat reluctant in setting up another 'licensing/monitoring body' to avoid the complications. Many simply did not respond.

- After 2 years, however, the Ministry of Power again circulated a redrafted bill to State governments and persuaded to respond. Finally, the bill could be passed in the parliament on 29 September 2001. A new agency, Bureau of Energy Efficiency, took over and replaced EMC.

7. The position in other countries

The barriers to adopting energy efficient technologies have been studied in different countries. Electric Power Research Institute of the USA in 1995, on the basis of such a study, indicated the barriers to be (i) scepticism, (ii) first cost, (iii) failure to meet the consumer needs, (iv) saving difficult to measure, (v) poor aesthetics, (vi) reluctance to change in behaviour required, and (vii) problems with infrastructure. More than one of these can be cited as the reason behind the poor progress made in different countries in energy conservation. One more point can be added to the list—the lack of trained personnel in implementing the recommendation, which come from experienced energy specialists.

In the 1980's many countries have passed legislations to better the efficiency in energy use. In Thailand the Energy Conservation and Promotion Act (ECPA) was passed in April 1992. Thai–German Energy Efficiency Project sponsored by Federal Government of Germany provided assistance in its implementation. Two German consultants [8] had reported the progress to be slow on account of (i) low awareness of energy conservation benefits and (ii) insufficient qualification of all key players.

In the UK in 1995, the Home Energy Conservation Act (HECA) was passed as residential energy use accounts for 28% of total primary energy use in the country. The Act devolved residential energy efficiency responsibility to local authorities with a target of enhancing the residential energy efficiency by 30% in 10–15 years. The report on the programme [9] again indicates that many officers (of the local authorities) given responsibility for HECA implementation had no experience in energy efficiency. The number of support staff had also been highly inadequate due to shortage of funds of the local bodies. Institutional weakness had also been cited as an impediment. The success of energy conservation programme depends on technical and economic issues but social factors, like spirit of cooperation, respect for sustainability, are also no less important.

The experience of two countries diverse in culture, economic and technical strength present one common cause for limited success—the gross inadequacy of trained people in the field of energy conservation. Lack of due awareness of the benefits of the practice is again an impediment in both. In India too, these are the reasons for the slow progress even now despite the fact that the initiatives were taken more than three decades back.

8. Recommendations

Against the backdrop of the past failures of energy conservation initiatives in India, the recommendations contained in the following paragraphs can be given due importance.

It can be seen that extensive powers have been given to the Bureau of Energy Efficiency under the Energy Conservation Act, 2001. However, for more efficient administration of the Act, it is felt that there could be an independent body called the Association of Indian Energy Managers (AIEM) to which some of the tasks and activities of BEE could be delegated. The BEE being a statutory body with many administrative duties and responsibilities, it would become difficult for it to effectively co-ordinate with designated consumers, designated agencies etc. and recognize and utilize the existing energy resources and infrastructure in order to effectively perform the functions assigned to it. This responsibility may be outsourced to the AIEM. Section 51 of the Energy Conservation Act, 2001 provides that the BEE can delegate any of its powers under the Act to any other 'person'. The AIEM may be conceived of as an 'Artificial Person' [10].

In India some states distribute electricity free to the farmers for political gains. Rampant misuse is common. The T&D losses are very high and the official figure is around 25%. Technical losses are somewhat higher compared to developed nations but the commercial losses, which have to cover theft and pilferage, are objectionably high. Some of the States have introduced Acts to check the theft. Overall, the atmosphere is not conducive to energy conservation in the power sector. The fact may be given due consideration in the EC Act.

The EC Act has a provision for the designating of an agency by a state to coordinate, regulate and enforce the provisions of the Act within the state and directs the state government to create a State Energy Conservation Fund to promote efficient use of energy in the state. Few states have so far complied with the directives—there is in general a reluctance of state bureaucracies to undertake fresh responsibilities. This requirement may be made more stringent.

The Act, otherwise well framed, has two glaring weak points besides few lesser others. These are

(a) Chapter VI, Clause 17, which permits the state designated agency to appoint, from 2006 AD onwards, as many inspecting officers as may be necessary for the purpose of ensuring compliance with the energy consumption standards laid down in the Act. There are fourteen existing legislations and as many implementing agencies, like the Boiler Act, Indian Electricity Act, Mines Act etc. related to energy conservation in a major or minor way. The right enforcement of these Acts is left to the Inspectors and the implementation quality leaves much to be desired. Since energy conservation efforts must have a voluntary component with consumers aware of their own gains, the imposition of Inspectors may prove to be counter productive. An Energy Advisory Cell of experts to assist and strengthen the voluntary efforts may be more effective.

(b) Chapter X, Clause 47: If at any time the Central Government is of the opinion that the functioning of the Bureau is violative of any directive of the Government for protecting public interest it may supersede the Bureau for periods not exceeding 6 The suppression of the Bureau at anytime will be an admission of inherent weakness of the implementation of measures beneficial to the nation and individual consumers. The officers of the Bureau are all appointed by the government. Why and how will the

Bureau as a body act against the directives of the government? This provision may be reconsidered.

The EC Act came to force with immediate effect except that the penalty clause has been kept in abeyance for 5 years during which people would be educated about the economics and efficacy of conservation. The government thereby shows its lack of determination to enforce the energy saving so important in improving the energy security of the country and abatement of climate change effects. The penal clauses may therefore be implemented more strictly.

If the high benefits of energy conservation (a unit saved is more than two units produced) are to be enjoyed it will be necessary

(i) to increase the awareness at all levels from lay public to leaders of industry,
(ii) to train up adequate number of people in the practice of energy conservation technologies in all the sectors of consumption.

An appreciation of the savings both at national and individual level is expected to take care of the institutional weaknesses. In case of environment the success in pollution control is found to be much better in all the countries due to widespread awareness created by environmental studies in school and college education and extensive media coverage. Energy and environment being very closely related there is no reason why energy conservation issues cannot form a part of the environmental education.

It is admitted that both creating awareness and training people will require sufficient funding support. If a small cess is collected on every type of energy sold, the government can generate a good fund for the promotion of energy conservation. The creation of such a fund has been proposed in the EC Act. It is said that 'Where there is will there is a way' and therefore a strong political will is likely to be the driving force behind success of energy conservation initiatives in India.

9. Conclusion

In all discussions relating to the issue of energy conservation, the need is felt for developing professionals who would provide the services of energy auditors and energy managers to the designated consumers. These qualified professionals are expected to be instrumental in achieving the noble objectives for which the Energy Conservation Act, 2001 was enacted. In furtherance of its initiatives towards this the Bureau of Energy Efficiency has taken two national level examinations in 2004 and 2005, respectively for finalizing a list of energy auditors and energy managers. A total number of around 2000 candidates have qualified in these examinations. Apart from conservation of non-renewable energy, energy security can also be achieved by the harnessing of renewable energy sources and the Ministry responsible for this, MNES, is acting religiously towards the same for setting the country on the wheels of sustainable development by attaining energy security.

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